

REMARKS

Summary of the Office Action

Applicants thank the Examiner for acknowledgement and reconsideration based on the response and amendment filed on October 6, 2005.

Claims 1-24, 39-81 were rejected under §102(b) as being anticipated by Lienau et al. (U.S. Patent No. 4,791,604). This rejection is respectfully traversed for the following reasons.

Claims 25-38 were rejected under §103(a) as being unpatentable over Lienau et al. (U.S. Patent No. 4,791,604) in view of Peterson, et al. (U.S. Patent No. 6,016,269). This rejection is respectfully traversed.

Summary of the Response to the Office Action

Claims 1, 17, 47, and 66 were amended. No new matter has been entered. Claims 1-81 are presently pending.

All Claims Comply with 35 U.S.C. § 102(b)

Claims 1-24, 39-81 were rejected under §102(b) as being anticipated by Lienau, et al. (U.S. Patent No. 4,791,604). This rejection is respectfully traversed for the following reasons.

As to the proffered rejection, it is respectfully submitted that the alleged anticipation is based on improper combination of mutually exclusive embodiments. For instance, in rejecting claims 1 and 47, the rejection cites to the magnetic elements of Figure 14, the magnetic field directions as shown in Figure 15, and write lines of Figure 16a. Figures 14 and 15 show an embodiment (i.e., sixth embodiment) that employs a generally rectangular magnetic core with a

gap (164) on one leg. The drive lines (166a,b) and (168a,b) run perpendicular to each other and to the magnetic core to create a magnetic field across the gap (164). Figure 16a shows an entirely separate embodiment (i.e., the seventh embodiment) using a pair of drive lines (176, 178) over a pair of planar magnetic elements (172) separated by layer (198) to create a magnetic field over gap (174). The configuration does not allow one to use the write lines as shown in Figure 16a to the magnetic elements of Figure 14 as proffered in the rejection. These two devices have completely different core configuration and cannot be interchanged as asserted in the rejection.

Moreover, contrary to the rejection, the X-Y axis indicated in Figure 15 is not for the purpose of showing the “direction of the magnetic field” as asserted. The specification refers to the X-Y axis of Figure 15 as depicting the direction of the “drive lines” (166a,b) and (168a,b). (See, e.g., col. 14, lns. 38-44, 46-49.) In another words, the X-Y axis shown in Figure 15 is used to depict that serpentine drive (i.e., write) lines (166a,b) run generally in the Y direction and the straight drive lines (168a,b) run perpendicular to lines (166a,b) in the X direction. The X-Y axis does not indicate a “magnetic field” direction of the remnant magnetic fields stored in each of the segments as alleged by the Office Action. More importantly, the only magnetic direction detected in the embodiment shown in Figure 14 is the magnetic field across the gap (164), not in each of the segments as recited in claims 1 and 47.

In addition to failing to provide a prima facie case of anticipation as explained above, it is respectfully submitted that Lienau, et al. fails to teach all the claimed limitations as required under anticipation. In particular, all of the independent claims, as amended, recite “a single

write line” for applying the write signal to the magnetic element (emphasis added). As shown in all the figures of the present application, the instant invention only needs one write line to store a magnetic field in the magnetic element thereby significantly reducing production time and cost. In contrast, Lienau, et al. teaches that each of its embodiments require at least a “pair” of write lines to store a remnant magnetic field in the memory core (see Figs. 1, 5, 9, 12b, 15, 16a, 25, 27a). Lienau, et al.’s memory device, therefore, is more cumbersome to make and use as the memory device of Lienau, et al. would be bulkier than the instant invention. Therefore, it is submitted that Lienau, et al. fails to anticipate claims 1-24, 39-81, and thus it is respectfully requested that these claims be passed to issue.

All Claims Comply with 35 U.S.C. § 103(a)

Claims 25-38 were rejected under §103(a) as being unpatentable over Lienau, et al. (U.S. Patent No. 4,791,604) in view of Peterson, et al. (U.S. Patent No. 6,016,269). This rejection is respectfully traversed.

The rejection asserts that although Lienau, et al. fails to teach that the magnetic element has two segments, Peterson, et al. teaches that the memory element can be of various different shaped cells having any number of segments corresponding to their shapes. Although Peterson, et al. does teach memory cells having different shapes, it still fails to teach a memory cell having the various types of segments as recited in claims 25-38. As stated in MPEP §2143.01, “[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” In another words,

just because one “could” use a different material does not mean it would have been “obvious” to one of ordinary skill in the art. A general assertion that one “could” have used another type of known memory cell shape is not enough to show *prima facie* case of obviousness. Moreover MPEP §2143.02 states that there must be some “expectation of success” in making the combination or modification.

Looking at Peterson, et al., none of the disclosed magnetic elements appear to be similar to that of Figure 14 of Lienau, et al., the embodiment on which the Examiner relied to reject the independent claims. The memory cells of Peterson, et al. appear to be an aggregate of basic shapes (e.g., square, circle, rectangle, sphere) that are stacked onto each other (Figures 3, 8, 11, 12, 14). Examiner’s assertion that “any” shape can be used appears to be limited to the type of shapes disclosed in Peterson, et al.. Taking claim 25 as an example (the only claim analyzed under the §103 rejection), none of the shapes disclosed or suggested in Peterson et al. has “two segments” as recited. The memory core as disclosed in Peterson, et al. appears to be made from an aggregate of simple-shaped elements. The memory core of Lienau, et al. used as the basis for the rejection, on the other hand, teaches an array of elements with relatively complex shapes (e.g., the generally C-shaped element). Therefore, it is not reasonable to assert that one with ordinary skill in the art would have incorporated any of these shapes of Peterson, et al. as a replacement for the generally C-shaped core of Figure 14 of Lienau, et al., especially when the shapes are so different that one with ordinary skill in the art would have to perform undue experimentation as to how the write lines of Lienau, et al. need to be adapted to write to the various memory cell shapes disclosed in Peterson, et al..

In addition, claims 25-38 either directly or indirectly depend from amended independent claims 1, 17, 47, and 66, which now recite “a single write line” in each memory cell. Neither Lienau, et al. nor Peterson, et al. teach such a feature. Therefore, it is respectfully submitted that claims 25-38 are also allowable over the art of record.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicants undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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